Sontex ■ Thermal Energy ■ Flow Metering ■

# Manual

## Radio Modem

# Supercom 636


| | |
|---|---|
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| Document: | Manual Supercom 636 rev. 211010 |
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Technical modifications subject to change without notice

# Revision

| Issue | Date | Author | Description |
|---|---|---|---|
| 200309 | 20.03.09 | NU | In accordance with software version 0.1.5 |
| 200409 | 20.04.09 | NU | In accordance with software version 0.1.6 |
| 230409 | 23.04.09 | MS | General Revue and approval |
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| 300609 | 30.06.09 | MS | General update, software version 0.1.12 |
| 160709 | 16.07.09 | SV | Modified frame SND_UD |
| 310809 | 31.08.09 | SV | Add number of manuel |
| 160909 | 16.09.09 | SV | Add chapter 3.1.6 (using the accumulators) |
| 051109 | 05.11.09 | SV | Adapted length of field in PDF file (page 11) |
| 150210 | 15.02.10 | SV | Add information related to xml files |
| 260410 | 26.04.10 | SV | Error in status byte description (page 11) |
| 310510 | 31.05.10 | SV | Modify frames pulse adapter 540 |
| 211010 | 21.10.10 | SV | Add 656 & 541. |

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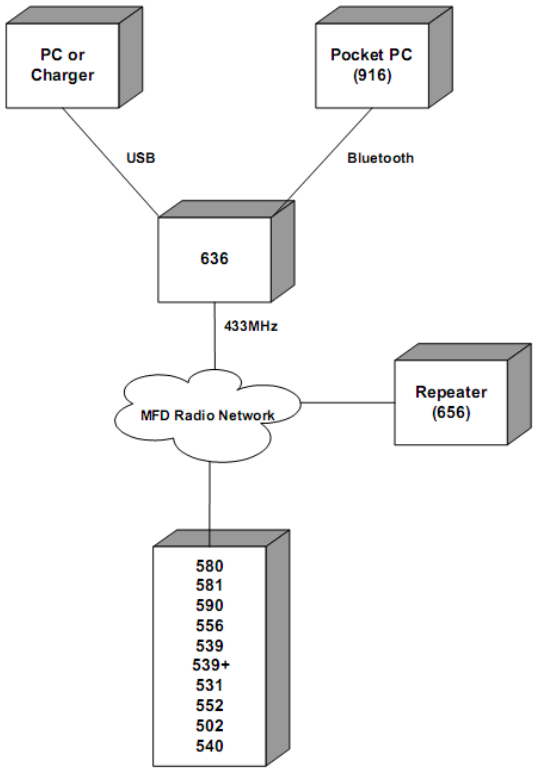
# 1. General

## 1.1 Introduction

This user guide describes the operation and the use of the radio modem 636. It is addressed to all users as well as to application engineers.

## 1.2 Field of application of modem

The external peripheral radio modem Supercom 636 is suitable for a connection to PC or Pocket PC with USB or Bluetooth. It allows the read out of meters per radio. The modem works at a frequency of 433.82 MHz and supports the protocols MFD and Radian 0.




## 1.3 Necessary configuration

The radio modem Supercom 636 can be connected to any system (PC, Laptop or Pocket PC) which has the following characteristics:

- USB port
  or
- Bluetooth

# 2. Scope of delivery

Content set radio modem Supercom 636:

- Radio modem Supercom 636 with belt clip
- 3 accumulators 1.2V type AAA (1000mAh)
- Radio antenna
- User manual
- CD with
  User manual (pdf)
  USB driver
  PDA SW Sontex916
  Firmware update PC SW Tools636
  Road Creator PC SW Tools916
- USB cable (mini USB - USB A male)
- USB charger (230VAC and 12VDC)

**! Accumulators are not charged !**
**! Initial charge necessary !**
**! 8 h minimum !**

# 3. How to use

## 3.1 Introduction

There're two possibilities to communicate with the modem Supercom 636: USB or Bluetooth. Both are using M-Bus protocol.

### 3.1.1 USB

- Speed: 38'400 bauds
- Bits: 8 bits
- Parity: even
- Stop bit: 1

The USB driver (virtual com port) you find on the CD delivered with the set radio modem Supercom 636 or on the internet at the following address: http://www.ftdichip.com/FTDrivers.htm

This driver is requested only at the first connection of the radio modem to the PC. Thereafter the communication will then be available from a com port (COMx).

### 3.1.2 Switch ON/OFF the modem

With the orange button the radio modem Supercom 636 can be switched ON and OFF.
After 10 minutes of inactivity the radio modem Supercom 636 shuts down by itself.

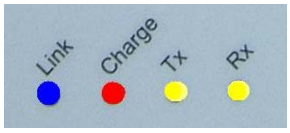
### 3.1.3 Bluetooth

For the start up the modem must first connect with the remote system.
To establish connection the following steps must be followed and completed:

- Switch ON the radio modem Supercom 636 over the orange button.
  The blue LED indicates that the modem Supercom 636 is visible to other Bluetooth devices.
- On the remote device (PDA) search for Bluetooth devices in your area.
  Check the manual of your remote device for instructions.
- Once the remote device found the modem radio Supercom 636 the remote device will display its name and serial number (e.g. Supercom 636 S/N: 08094002).
- Select it and enter the following password if necessary: 0000
- Depending on the remote device you have to indicate a COM port number for the outgoing communication. Please check the manual of your remote device for instructions. This task must only be performed once.
- Once the remote device opens a communication port to the radio modem Supercom 636 the blue LED is blinking as long the port is open. When the port is closed the blue LED is on but not blinking.

### 3.1.4 LED display

There're four LEDs on the front of the device.




- Link : (Blue)

| Conditions | LED state |
|---|---|
| The modem is ON | ON |
| A Bluetooth communication port is opened. | Blinking<br>0.25s every 2s |
| The modem is OFF | OFF |

- Charge: (Red)

| Conditions | LED state |
|---|---|
| Accumulators charged | OFF |
| Low power | Blinking 0.25s every 3s |
| ** Near empty | 1 blink |
| Charging | ON |

** If the accumulators are near empty the device shuts down by itself.

- Tx : (yellow)

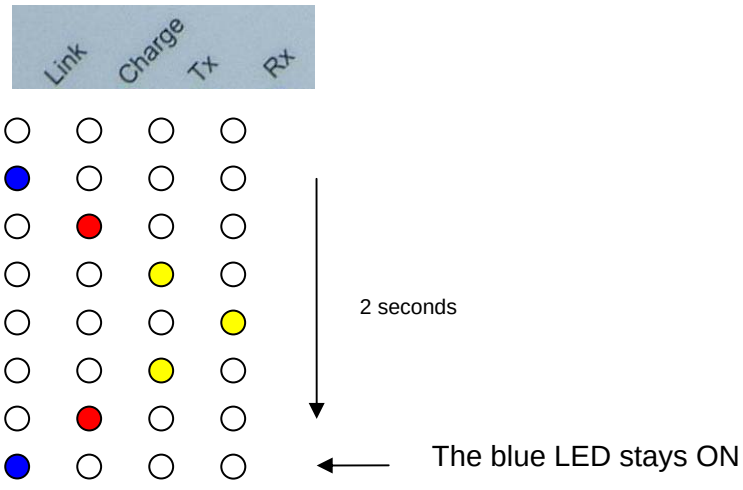
| Conditions | LED state |
|---|---|
| A byte is transmitted via radio | 0.25s per byte |

- Rx : (yellow)

| Conditions | LED state |
|---|---|
| A byte is received via radio | 0.25s per byte |

#### 3.1.4.1 Switch ON sequence

By turning ON the Supercom 636, the following LEDs sequence is running:




If another sequence is running contact your local Sontex agent or the Sontex technical support. (See last page of this document for contacts).

## 3.1.5 Charging accumulators

The radio modem Supercom 636 needs 3 accumulators 1.2V type AAA Ni-Mh (1000mAh). In case of replacing the accumulators we recommend to always use products of the same supplier of accumulators.

**Only use Ni-Mh accumulators.**

**Disposal of battery and device**

It is mandatory to dispose of used accumulators and the radio modem Supercom 636 environmental friendly or to return it after use to the manufacturer for appropriate disposal to ensure that the components are recycled in accordance with the battery and electronic scrap regulations. If you decide to dispose of the battery or the device yourself get proper information about recycling possibilities locally.

The radio modem Supercom 636 can be charged by USB on a host PC hub (500mA) or with the charger (recommended) delivered with the set. The red LED indicates the charging mode (see 3.1.4.)

**The device must be charged first before a first use (Minimum 8 hours).**

Once the device is fully charged it will switch OFF automatically.

## 3.1.6 Using the accumulators

Accumulators are self discharging over time, accumulators not used must be charged at least every 6 months.

# 4. Communication

## 4.1 Introduction

The radio modem Supercom 636 uses the M-Bus protocol according to EN1434 to communicate. It supports primary and secondary addressing. For more detailed information, please refer to the M-Bus documentation available on the internet: http://www.m-bus.com/

### 4.1.1 Reading concept

The radio modem is like 2 separate devices:
1. The modem itself
2. The device to be read

Each device can be accessed with its secondary address (serial number) or primary address:
- Primary address for modem 636: **251**
- Primary address for device to be read: **254**

The 636 has a local memory which can contain the information (address and readout method) of the radio device to be read (maximum one).

The 636 contains two frames.
1. Modem information
2. Device to read information (address and readout method) if present

To read a radio device (e.g Radio module Supercom 580) the necessary information (radio address and readout method) must be introduced into the local memory with the

command “SND_UD”

containing the field “Add entry to device list”.

The radio communication is started with the

command “SND_UD”

containing the field “Start read radio process”.

Sending a request to the radio modem Supercom 636 during the radio process will return a “busy” frame. (3. / page 12).

To read the result send a request “REQ_UD2” to the device address “254”.

### 4.1.2 Writing concept

For information about the writing concept contact your local Sontex agent or Sontex directly.
Detailed documentation and support can be provided.
(See last page of this document for contacts).

### 4.1.3 Detailed reading steps

See Annex A, page 14, for the detailed reading process schematic.

1. Request the frame “Rsp1” with a “REQ_UD2” (Addr.251).

Frame “Rsp1” (Contains modem information)

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | FD or FB | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 14 | C, 8 bits | |
| | Device type | 0E | D, 8 bits | Bus / System component |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Detailed errors | 02,FD 17,er er | D, 16 bits | |
| | Current date & time | 04,6D,xx xx xx xx | F, 32 bits | |
| | Parameters flags | 01,FD 66,pp | D, 8 bits | |
| | Internal version | 0C,FD 0F,xx xx xx xx | A, 32 bits | |
| | Hardware version | 02,FD 0D,xx xx | C, 16 bits | |
| | Fabrication Number | 0C,78,xx xx xx xx | A, 32 bits | |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

**Keys**

| | |
|---|---|
| | Optional record |
| `xx` | Value LSByte first |
| `yy` | Value MSByte first |
| `ch` | ASCII character |
| `cs` | The value of Check Sum is calculated from arithmetical sum modulo 256 of each byte of the frame except the fields: Start, Length (if any), Check Sum and Stop. |

`er er` Detailed errors

| | **636** | ***M-Bus standard*** |
|---|---|---|
| `bit0` | † | *Tamper* |
| `bit1` | Accumulators low | *Battery low* |
| `bit2` | † | *External alarm* |
| `bit3` | † | *Battery cut* |
| `bit7..4` | † | *RSSI* |
| `bit8` | SND_UD frame: unknown CI. | |
| `bit9` | SND_UD frame, structured write: unknown field. | |
| `bit10` | † | |
| `bit11` | SND_UD frame, structured write: bad field size. | |
| `bit12` | SND_UD frame, structured write: memory overflow. | |
| `bit13` | † | |
| `bit14` | Invalid time clock | |
| `bit15` | Last radio process error | |

| | |
|---|---|
| `Le` | Length of the M-Bus frame. The fields Start, Length, Check Sum and Stop (6 bytes) are not included in the calculation of the Length field. The Length field is repeated twice preceded and followed by the Start field 68h. |
| `Ls` | Length of ASCII character string<br>**Warning**: according to the M-Bus standard, the first byte following the length byte is the rightmost character of the string, and the last byte is the leftmost character. |
| `mo` | More records in next telegram :<br>`0Fh` no<br>`1Fh` yes |
| `pp` | Parameter flags<br>`bit0` When the selected device is in the device list, but not yet read :<br>0: send an ""empty"" RSP_UD (with just the 12 bytes header)<br>1: do not send anything |

`st` Status

| | **636** | ***M-Bus standard*** |
|---|---|---|
| `bit1..0` | Application | *Application* |
| `00b` | No error | *No error* |
| `01b` | † | *Application busy* |
| `10b` | Any application error | *Any application error* |
| `11b` | † | *Reserved* |
| `bit2` | Accumulators low | *Power low* |
| `bit3` | † | *Permanent error* |
| `bit4` | † | *Temporary error* |
| `bit5` | † | *Manufacturer specific* |
| `bit6` | Invalid time clock | *Manufacturer specific* |
| `bit7` | Last radio process error | *Manufacturer specific* |

† Not used.

2. To read a device send the command “SND_UD" (Addr.251):

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 73\|53 | | Send user data to slave, SND_UD |
| | Address | FD or FB | | |
| User data | Control Information | 51 | | Stuctured write telegram |
| | Current date & time | 04,6D,xx xx xx xx | F, 32 bits | |
| | Add entry to device list | 0D,FF 16,Ls xx xx xx xx

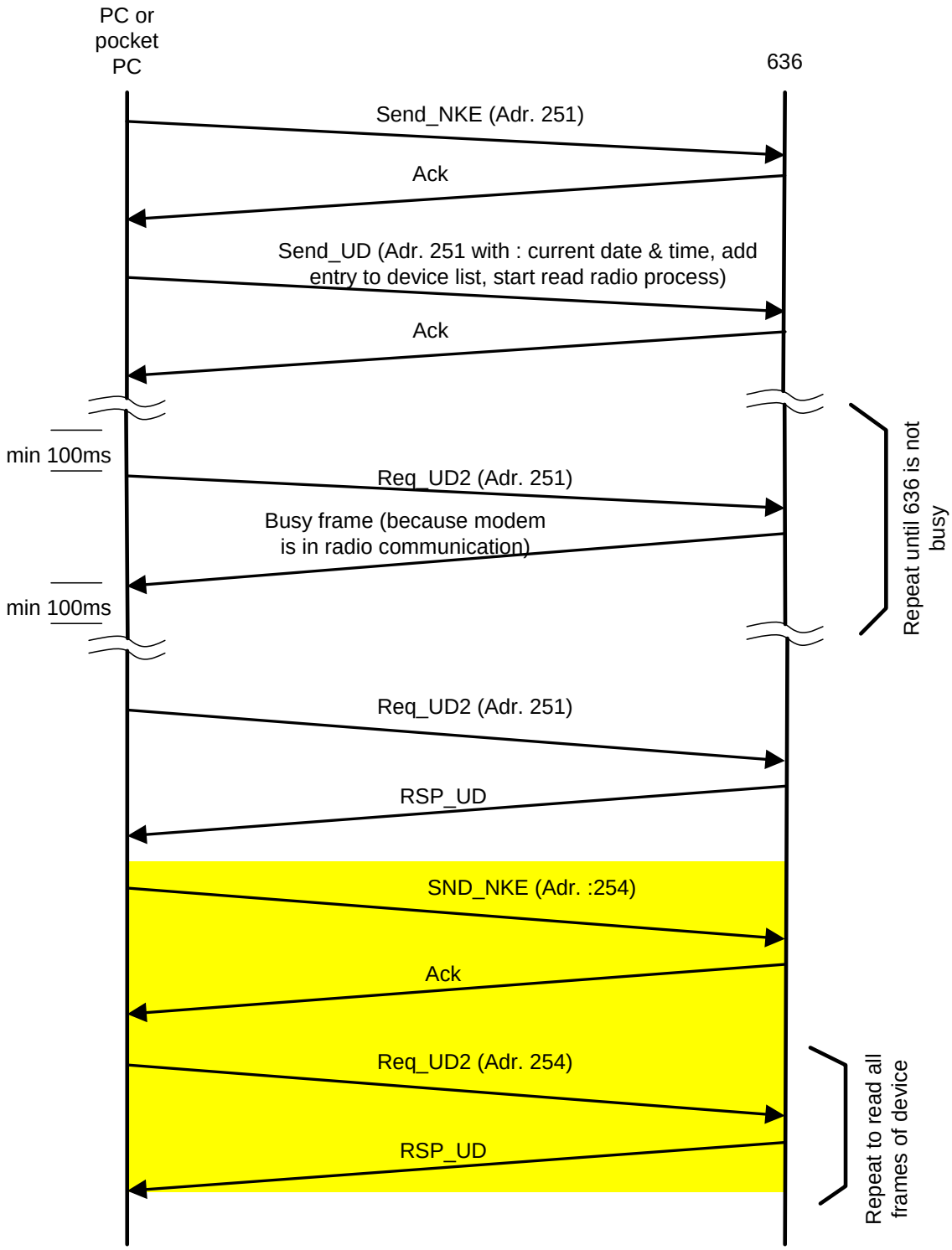
# 5. Utilities

## 5.1 Firmware Update

The firmware of the modem Supercom 636 can be updated by the USB interface from a computer with the software Tools636.

# 6. Annex A

## 6.1 Detailed reading process schematics



# 7. Annex B

## 7.1 Add entry to device list to read a device

| | | Identification Number | Manufacturer ID | Generation of Meter | Measured Media | Radio Address | Radio Device Type | Options | Maximal Frame Number | Application Reset Subcode | Date of Last Successful Reading |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type | A | C | C | D | A | C | D | C | D | G |
| | Bytes | 4 | 2 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 2 |
| | Notes | a, e | a, e | a | a | b, e | b | b | b | b | c, e |
| Device type | Values to read | | | | | | | | | | |
| HCA 502, 502S, 552 | All values | xxxxxxxxh | 4DEEh | 4 | 08h | xxxxxxxxh | 0 | 80h | 01h | 00h | 0101h |
| HCA 502S, 552 | All values (compact reading) | xxxxxxxxh | 4DEEh | 4 | 08h | xxxxxxxxh | 0 | 80h | 01h | 01h | 0101h |
| Supercal 539 or 539+ | Current values | xxxxxxxxh | 4DEEh | 4 | 04h | xxxxxxxxh | 1 | 80h | 01h | 00h | 0101h |
| Supercal 539+ | + monthly energy | xxxxxxxxh | 4DEEh | 4 | 04h | xxxxxxxxh | 1 | 80h | 02h | 00h | 0101h |
| Supercal 539+ | + monthly volume | xxxxxxxxh | 4DEEh | 4 | 04h | xxxxxxxxh | 1 | 80h | 03h | 00h | 0101h |
| Supercal 539+ | All values | xxxxxxxxh | 4DEEh | 4 | 04h | xxxxxxxxh | 1 | 80h | 05h | 00h | 0101h |
| 540 pulses | All values | xxxxxxxxh | 4DEEh | 1 | 00h | xxxxxxxxh | 2 | 80h | 04h | 00h | 0101h |
| 531 | frames 1, 2, 3, 4 | xxxxxxxxh | 4DEEh | 12 | 04h | xxxxxxxxh | 3 | 80h | 04h | 00h | 0101h |
| 531 | frames 1, 2, 3, 4, 5, 10 | xxxxxxxxh | 4DEEh | 12 | 04h | xxxxxxxxh | 3 | 80h | 06h | 01h | 0101h |
| 531 | frames 106, 107 | xxxxxxxxh | 4DEEh | 12 | 04h | xxxxxxxxh | 3 | 80h | 04h | 02h | 0101h |
| 531 | frames 56, 57, 58, 59 | xxxxxxxxh | 4DEEh | 12 | 04h | xxxxxxxxh | 3 | 80h | 04h | 03h | 0101h |
| 590 WCA | All values | xxxxxxxxh | 38AFh | 4 | 07h | xxxxxxxxh | 4 | 81h | 01h | 00h | 0101h |
| 580 Water counter | All values | xxxxxxxxh | 4DEEh | 10 | 07h | xxxxxxxxh | 4 | 80h | 01h | 00h | 0101h |
| 581 Water counter | All values | xxxxxxxxh | 4DEEh | 20 | 07h | xxxxxxxxh | 4 | 80h | 01h | 00h | 0101h |
| 556 HCA | All values | xxxxxxxxh | 4DEEh | 16 | 08h | xxxxxxxxh | 5 | B1h | 02h | 00h | 0101h |
| 541 pulses | All values | xxxxxxxxh | 4DEEh | 10 | 00h | xxxxxxxxh | 6 | 90h | 03h | 00h | 0101h |
| 656 repeater | All values | xxxxxxxxh | 4DEEh | 30 | 0Eh | xxxxxxxxh | 6 | 00h | 01h | 00h | 0101h |

Notes

| | |
|---|---|
| a | This value is part of the M-Bus secondary address used to access the data of a device stored in 636. It is updated by 636 according to the value really read from the device by radio. |
| b | This value is used to access the device by radio. It is never modified by the 636 itself. |
| c | The date 1.1.2000 means ""not yet successful read"", coded in M-Bus G type: 0101h |
| e | Multibytes values are transmitted with LSB first. |

Options

bit7 Adjust device clock: 0=no, 1=yes

# 8. Annex C

## 8.1 Encoded frames Radio Pulse Adapter 540

Rsp_1

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | xx | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 01 | C, 8 bits | |
| | Device type | 00 | D, 8 bits | |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Current date & time | 04,6D,xx xx xx xx | F, 32 bits | |
| | Identification number | 0C,79, xx xx xx xx | A, 32 bits | |
| | Medium string | 0D,FD 09,03, me me me | LVAR | 3 char |
| | Units string | 0D,FD 67,05, un un un un un | LVAR | 5 char |
| | Units factor | 05,EE 76,xx xx xx xx | H, 32 bits | dimensionless |
| | Totalizer initial value | 44,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Info string | 0D,FD 0C,18,ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch | LVAR | 24 char |
| | Totalizer current value | 04,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 1 | 84 01,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 2 | C4 01,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 3 | 84 02,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 4 | C4 02,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 5 | 84 03,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 6 | C4 03,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 7 | 84 04,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 8 | C4 04,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 9 | 84 05,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 10 | C4 05,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 11 | 84 06,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 12 | C4 06,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 13 | 84 07,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 14 | C4 07,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 15 | 84 08,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 16 | C4 08,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

Rsp_2

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | xx | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 01 | C, 8 bits | |
| | Device type | 00 | D, 8 bits | |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Identification number | 8C 40,79, xx xx xx xx | A, 32 bits | |
| | Medium string | 8D 40,FD 09,03,me me me | LVAR | |
| | Units string | 8D 40,FD 67,05,un un un un un | LVAR | 3 char |
| | Units factor | 85 40,EE 76,xx xx xx xx | H, 32 bits | 5 char |
| | Totalizer initial value | C4 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Info string | 8D 40,FD 0C,18,ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch | LVAR | dimensionless |
| | Totalizer current value | 84 40,6E,xx xx xx xx | B, 32 bits | 24 char |
| | Units stored at month - 1 | 84 41,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 2 | C4 41,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 3 | 84 42,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 4 | C4 42,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 5 | 84 43,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 6 | C4 43,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 7 | 84 44,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 8 | C4 44,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 9 | 84 45,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 10 | C4 45,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 11 | 84 46,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 12 | C4 46,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 13 | 84 47,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 14 | C4 47,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 15 | 84 48,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 16 | C4 48,6E,xx xx xx xx | B, 32 bits | |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

Rsp_3

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | xx | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 01 | C, 8 bits | |
| | Device type | 00 | D, 8 bits | |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Identification number | 8C 80 40,79, xx xx xx xx | A, 32 bits | |
| | Medium string | 8D 80 40,FD 09,03,me me me | LVAR | |
| | Units string | 8D 80 40,FD 67,05,un un un un un | LVAR | 3 char |
| | Units factor | 85 80 40,EE 76,xx xx xx xx | H, 32 bits | 5 char |
| | Totalizer initial value | C4 80 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Info string | 8D 80 40,FD 0C,18,ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch | LVAR | dimensionless |
| | Totalizer current value | 84 80 40,6E,xx xx xx xx | B, 32 bits | 24 char |
| | Units stored at month - 1 | 84 81 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 2 | C4 81 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 3 | 84 82 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 4 | C4 82 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 5 | 84 83 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 6 | C4 83 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 7 | 84 84 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 8 | C4 84 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 9 | 84 85 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 10 | C4 85 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 11 | 84 86 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 12 | C4 86 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 13 | 84 87 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 14 | C4 87 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 15 | 84 88 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 16 | C4 88 40,6E,xx xx xx xx | B, 32 bits | |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

Rsp_4

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | xx | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 01 | C, 8 bits | |
| | Device type | 00 | D, 8 bits | |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Identification number | 8C C0 40,79, xx xx xx xx | A, 32 bits | |
| | Medium string | 8D C0 40,FD 09,03,me me me | LVAR | |
| | Units string | 8D C0 40,FD 67,05,un un un un un | LVAR | 3 char |
| | Units factor | 85 C0 40,EE 76,xx xx xx xx | H, 32 bits | 5 char |
| | Totalizer initial value | C4 C0 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Info string | 8D C0 40,FD 0C,18,ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch | LVAR | dimensionless |
| | Totalizer current value | 84 C0 40,6E,xx xx xx xx | B, 32 bits | 24 char |
| | Units stored at month - 1 | 84 C1 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 2 | C4 C1 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 3 | 84 C2 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 4 | C4 C2 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 5 | 84 C3 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 6 | C4 C3 40,6E,xx xx xx xx | B, 32 bits | dimensionless |
| | Units stored at month - 7 | 84 C4 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 8 | C4 C4 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 9 | 84 C5 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 10 | C4 C5 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 11 | 84 C6 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 12 | C4 C6 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 13 | 84 C7 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 14 | C4 C7 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 15 | 84 C8 40,6E,xx xx xx xx | B, 32 bits | |
| | Units stored at month - 16 | C4 C8 40,6E,xx xx xx xx | B, 32 bits | |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

## Notes

### Medium

| | | |
|---|---|---|
| me | | ASCII characters (3x) |
| | «ELE» | electricity |
| | «GAS» | gas |
| | «HCA» | heat cost allocator |
| | «HEA» | heat |
| | «HWA» | hot water |
| | «OIL» | oil |
| | «STE » | steam |
| | «WAT» | water |
| | «OTH» | other |
| | « » | unknown medium |

### Units

| | | |
|---|---|---|
| un | | ASCII characters (5x) |
| | «Imp» | impuls |
| | «J» | Joules |
| | «kJ» | kilo Joules |
| | «MJ» | Mega Joules |
| | «l» | liter |
| | «m3» | cubic meter |
| | «Wh» | Watt hour |
| | «kWh» | kilo Watt hour |
| | «MWh» | Mega Watt hour |
| | « » | unknown unit |

### Information

| | | |
|---|---|---|
| ch | | ASCII characters (24x) |
| | « » | all what you like |

| | | |
|---|---|---|
| mo | | More records in next telegram : |
| | 0F | no |
| | 1F | yes |

# 8.2 Encoded frames calculator Supercal 531 (rsp106 and rsp107)

Rsp_1

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | xx | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 00 | C, 8 bits | |
| | Device type | dt | D, 8 bits | |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Detailed errors | 02,FD 17,er er | D, 16 bits | |
| | Energy totalizer heating | 04,en en,xx xx xx xx | B, 32 bits | |
| | Volume totalizer | 04,vo vo,xx xx xx xx | B, 32 bits | |
| | Energy totalizer tarif 1 | 84 10,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer tarif 2 | 84 20,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer stored at ST 1 | C4 84 01,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 1 | 44,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 2 | 84 01,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 3 | C4 01,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 4 | 84 02,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 5 | C4 02,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 6 | 84 03,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 7 | C4 03,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 8 | 84 04,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 9 | C4 04,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 10 | 84 05,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 11 | C4 05,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 12 | 84 06,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 13 | C4 06,en en,xx xx xx xx | B, 32 bits | |
| | Energy stored at month - 14 | 84 07,en en,xx xx xx xx | B, 32 bits | |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

## Rsp_2

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | xx | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 00 | C, 8 bits | |
| | Device type | dt | D, 8 bits | |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Energy totalizer 1 stored at month - 1 | C4 10,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 2 | 84 11,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 3 | C4 11,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 4 | 84 12,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 5 | C4 12,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 6 | 84 13,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 7 | C4 13,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 8 | 84 14,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 9 | C4 14,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 10 | 84 15,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 11 | C4 15,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 12 | 84 16,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 13 | C4 16,en en,xx xx xx xx | B, 32 bits | |
| | Energy totalizer 1 stored at month - 14 | 84 17,en en,xx xx xx xx | B, 32 bits | |
| | Power maximum stored at - 1 | D5 82 03,2B,xx xx xx xx | H, 32 bits | |
| | Power maximum stored at - 2 | 95 83 03,2B,xx xx xx xx | H, 32 bits | |
| | Power maximum stored at - 3 | D5 83 03,2B,xx xx xx xx | H, 32 bits | |
| | Power maximum stored at - 4 | 95 84 03,2B,xx xx xx xx | H, 32 bits | |
| | Power maximum stored at - 5 | D5 84 03,2B,xx xx xx xx | H, 32 bits | |
| | Power maximum stored at - 6 | 95 85 03,2B,xx xx xx xx | H, 32 bits | |
| | Power maximum stored at - 7 | D5 85 03,2B,xx xx xx xx | H, 32 bits | |
| | Power maximum date/time stored at - 1 | C4 82 03,6D,xx xx xx xx | F, 32 bits | |
| | Power maximum date/time stored at - 2 | 84 83 03,6D,xx xx xx xx | F, 32 bits | |
| | Power maximum date/time stored at - 3 | C4 83 03,6D,xx xx xx xx | F, 32 bits | |
| | Power maximum date/time stored at - 4 | 84 84 03,6D,xx xx xx xx | F, 32 bits | |
| | Power maximum date/time stored at - 5 | C4 84 03,6D,xx xx xx xx | F, 32 bits | |
| | Power maximum date/time stored at - 6 | 84 85 03,6D,xx xx xx xx | F, 32 bits | |
| | Power maximum date/time stored at - 7 | C4 85 03,6D,xx xx xx xx | F, 32 bits | |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

## Rsp_3

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | xx | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 00 | C, 8 bits | |
| | Device type | dt | D, 8 bits | |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Fabrication Number MET | 0C,78,xx xx xx xx | A, 32 bits | |
| | Fabrication Number MIO | 8C C0 C0 40,78,xx xx xx xx | A, 32 bits | |
| | Current date & time | 04,6D,xx xx xx xx | F, 32 bits | |
| | Power | 05,2B,xx xx xx xx | H, 32 bits | [W] |
| | Flow | 05,3E,xx xx xx xx | H, 32 bits | [m3/h] |
| | Days without energy | 02,FF 05,xx xx | C, 16 bits | [days] |
| | Days without flow | 02,FF 06,xx xx | C, 16 bits | [days] |
| | High temperature | 05,5B,xx xx xx xx | H, 32 bits | [°C] |
| | Low temperature | 05,5F,xx xx xx xx | H, 32 bits | [°C] |
| | Identification number 1 | 8C 40,79,xx xx xx xx | A, 32 bits | |
| | Complementary counter 1 totalizer | 84 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 1 | C4 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 2 | 84 41,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 3 | C4 41,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 4 | 84 42,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 5 | C4 42,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 6 | 84 43,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 7 | C4 43,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 8 | 84 44,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 9 | C4 44,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 10 | 84 45,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 11 | C4 45,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 12 | 84 46,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 13 | C4 46,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 1 totalizer stored at month - 14 | 84 47,co co,xx xx xx xx | B, 32 bits | |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

Rsp_4

| | Field | Frame bytes in hex (Note 1) | Coding | Comment |
|---|---|---|---|---|
| Start | Start, Length | 68,Le Le,68 | | |
| | Control | 08 | | Respond with user data, RSP_UD |
| | Address | xx | | |
| User data | Control Information | 72 | | Variable structure respond |
| | Identification number | xx xx xx xx | A, 32 bits | |
| | Manufacturer ID | EE 4D | C, 16 bits | "SON" |
| | Version of meter | 00 | C, 8 bits | |
| | Device type | dt | D, 8 bits | |
| | Access number | xx | C, 8 bits | |
| | Status | st | Ds, 8 bits | |
| | Signature (not used) | 00 00 | C, 16 bits | |
| | Identification number 2 | 8C 80 40,79,xx xx xx xx | A, 32 bits | |
| | Complementary counter 2 totalizer | 84 80 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 1 | C4 80 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 2 | 84 81 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 3 | C4 81 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 4 | 84 82 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 5 | C4 82 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 6 | 84 83 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 7 | C4 83 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 8 | 84 84 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 9 | C4 84 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 10 | 84 85 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 11 | C4 85 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 12 | 84 86 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 13 | C4 86 40,co co,xx xx xx xx | B, 32 bits | |
| | Complementary counter 2 totalizer stored at month - 14 | 84 87 40,co co,xx xx xx xx | B, 32 bits | |
| | More records in next telegram | mo | | Start of manufacturer specific data |
| End | Check Sum | cs | | |
| | Stop | 16 | | |

Note : See Supercal 531 M-Bus frames documentation for details

Notes

Notes

# CD

**CE Conformity according to R&TTE 1999/5/CE**
The detailed certificate of conformity you can find on our internet homepage:
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